AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

1. (**Currently amended**) [[A]] An image processing method for enhancing underwater imaging affected by image degradation effects, the method comprising:

acquiring at least one image of an underwater scene using an imaging device;

determining attenuation of parts of the scene as acquired by the imaging device and determining the contribution of veiling light to said acquired at least one image, the attenuation and contribution of veiling light derived from said at least one image; and

reconstructing an image of the underwater scene using a physics-based mathematical model, compensating image characteristics influenced by the attenuation and the veiling light degradation effects, and compensating underwater degradation effects relating to the optical path between illumination sources and different parts of the scene.

2. (Previously presented) The method of claim 1, wherein the image characteristics are selected from a group of image characteristics consisting of: contrast, color, sharpness, and brightness.

3. (Canceled)

4. (Previously presented) The method of claim 1, wherein compensating underwater degradation effects relating to the optical path between illumination sources and the scene comprises white-balancing.

5. (Previously presented) The method of claim 1, wherein the physics-based mathematical model comprises an inversion of an image-formation model.

6. (Previously presented) The method of claim 5, wherein the inversion includes regularization.

7. (Original) The method of claim 5, wherein the image-formation model that is inverted is approximated such that the approximation error is not discernible.

8. (Original) The method of claim 1, wherein acquiring of at least one image of the underwater scene comprises acquiring at least two images in different imaging settings.

9. (Original) The method of claim 8, wherein said at least two images are acquired in different resolution.

10. (Original) The method of claim 8, wherein acquiring at least two images in different imaging conditions comprises acquiring at least two images of the scene in different polarizing states of the imaging device.

11. (Original) The method of claim 1, wherein acquiring said at least two images comprises acquiring said at least two images simultaneously.

12. (Original) The method of claim 1, wherein the reconstructed image comprises three-dimensional rendering of the scene.

13. (Previously presented) The method of claim 1, wherein the determined attenuation of parts of the scene is used to reconstruct a distance map of the scene.

14. (Original) The method of claim 1, wherein the imaging device comprises a camera.

15. (Original) The method of claim 1, wherein the imaging device comprises at least two cameras.

16. (Previously presented) The method of claim 1, further comprising determining the distances of the parts of the scene from the imaging device based on said at least one image.

17. (Previously presented) A system for enhancing underwater imaging affected by image degradation effects, the system comprising:

an imaging device adapted to acquire at least one image of an underwater scene using an imaging device;

a processing unit for determining attenuation of parts of the scene as acquired by the imaging device and determining the contribution of veiling light to said acquired at least one image, the attenuation and contribution of veiling light derived from said at least one image; and

reconstructing an image of the underwater scene using a physics-based mathematical model, compensating image characteristics influenced by the attenuation and the veiling light degradation effects, and compensating underwater degradation effects relating to the optical path between illumination sources and different parts the scene.

18. (Previously presented) The method of claim 1, wherein the step of determining attenuation of parts of the scene as acquired by the imaging device and determining the contribution of veiling light to said acquired at least one image is done using image data from said at least one image.